Geometry Name _____

Logic Review Date _____ Block _____

Circle the correct answer to each of the following

1. What is the converse of the statement "If $\angle 2 \cong \angle 3$, then $m\angle 2 = m\angle 3$"?

a) If $\angle 2 \cong \angle 3$, then $\angle 3 \cong \angle 2$. b) If $m\angle 2 = m\angle 3$, then $m\angle 3 = m\angle 2$.

c) If $m\angle 2 = m\angle 3$, then $\angle 2 \cong \angle 3$. d) none of these

2. What is the conclusion of the statement, "If today is Friday, then tomorrow is Saturday"?

a) today is not Friday b) tomorrow is Saturday

c) today is Friday d) today is Saturday

3. The transitive property of equality states, "if c = d and d = e, then _____."

a) d = d b) c = e c) e = d d) all of these

4. Which of the following could be a reason stated in a proof?

a) definition b) given c) postulate d) all of these

5. Write the statement, "a dog likes bones," in if-then form.

a) If an animal likes bones, then it is a dog. b) If an animal is a dog, then it likes bones.

c) If an animal does not like bones, then it isn't a dog. d) none of these

6. Write the following conditional statement in if-then form. *Two planes intersect in a line.*

If two planes intersect then their intersection is a line.

Write the requested alternate form of each given conditional

7. If two angles are vertical, then the angles are congruent.

Inverse: If two ∠s are not vertical then they are not ≅.

8. If the two angles have a sum of 180 degrees, then they are supplementary angles.

Converse: If two ∠s are supp, then they have a sum of 180°

9. If an angle measures 50 degrees, then the angle is acute.

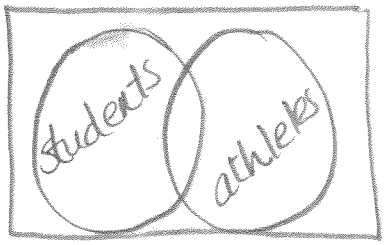
Contrapositive: If an angle is not acute, then the ∠ does not measure 50°

10. The intersection is a line, if two planes intersect.

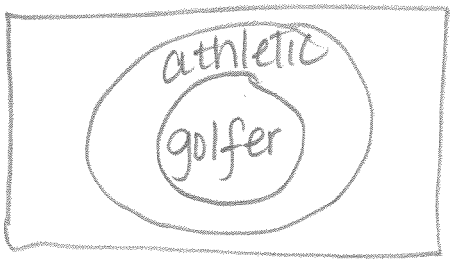
Inverse: If two planes do not intersect then the intersection is not a line

Draw a Venn Diagram for each of the following

11. Some students are athletes.



12. If you are a golfer, then you are athletic.



Write the given conditionals in symbolic form

Let p and q represent the statements: p = two angles have a sum of 90 degrees

q = the angles are complementary

13. If angles are not complementary, then the two angles do not have a sum of 90 degrees. $\sim q \rightarrow \sim p$

14. If two angles have a sum of 90 degrees, then the angles are complementary.

$p \rightarrow q$

Using the Law of Syllogism and the Law of Detachment, what conclusion, if any, can be formed from the given statements?

15. If x is a real number, then x squared is nonnegative.

X squared is nonnegative.

no valid conclusion x could be a complex #

16. If an angle measures less than 90, then it is acute.

Angle A measures less than 90 degrees.

$\angle A$ is acute

17. If AB is a segment, then AB = AB.

CD is a segment. CD = CD

18. If two angles form a linear pair, then they share a common ray. If two angles share a common ray, then they are adjacent.

Angles C and D form a linear pair. $\angle$s C and D are adjacent.

19. If Molly studies her geometry, then she passes the test. If Molly passes the test, then she will get a good grade.

Molly does not study her geometry. no valid conclusion

Determine if the following conclusions are valid based on the given statement. If invalid, provide a counter-example.

39. Given: $\angle 1$ and $\angle 2$ are supplementary angles.

Conclusion: $\angle 1$ and $\angle 2$ are congruent. Invalid, $\angle 1$ could be acute, $\angle 2$ could be obtuse

40. Given: Ray CD bisects <ECF.

Conclusion: <ECD is congruent to <DCF

True

Write a 2 column proof for each of the following

41. Given: $5 + 2x = 3(4x - 5)$

Prove: $x = 2$

Statement	Reason
1. $5 + 2x = 3(4x - 5)$	1. Given
2. $5 + 2x = 12x - 15$	2. Distri
3. $5 = 10x - 15$	3. Subtraction
4. $20 = 10x$	4. Addition
5. $2 = x$	5. Division
6. $x = 2$	6. Symmetric

Match each statement to its correct property. Use each property only once.

F 20. XY ≅ XY

E 21. If CD + PQ = XY, then CD + PQ – PQ = XY - PQ

H 22. (x + y) + z = x + (y + z)

B 23. 7(2x – 3) = 14x - 21

C 24. If PQ = WX and WX = AZ , then PQ = AZ.

D 25. If AB = CD, then CD = AB.

G 26. If y = 2, then 4y = 2(4)

A 27. If m<1 + m<< $2 = 180$ *and* $m < 2$ =m<6, then m<1 + m<6 = 180.

A Substitution property of Equality

B Distributive property of Equality

C Transitive property of Equality

D Symmetric property of Equality

E Subtraction property of Equality

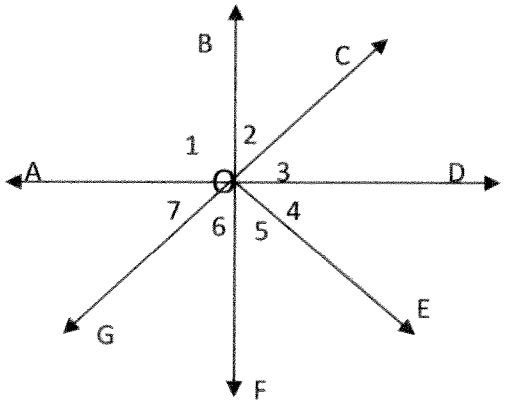
F Reflexive property of Congruency

G Multiplication property of Equality

H Associative property of Addition

Use the following terms for problems #28 – 38. Some terms may not be used.		
Complementary Angles	**Angle Bisector**	**Midpoint**
Segment Addition Postulate	**Right Angles**	**Angle Addition Postulate**
Obtuse Angles	**Definition of Congruence of Angles**	**Vertical Angles**
Segment Bisector	**Linear Pair**	**Perpendicular Lines**

Use the diagram to help state the property, theorem, or postulate associated with the given statement.



28. If $\overleftrightarrow{BF} \perp \overleftrightarrow{AD}$, then$\angle BOD$ is right . Perpendicular Lines

29. $m\angle BOC + m$ <COF = 180 Linear Pair

30. $\angle 3 \cong \angle 7$ Vertical ∠s

31. $m\angle 1 + m\angle 2 = m\angle AOC$ Angle Addition Postulate

32. $\overline{CO} + \overline{OG} = \overline{CG}$ Segment Addition Postulate

33. If $\angle 7 \cong \angle 6$, then $\overrightarrow{OG}$ bisects $\angle AOF$. Angle Bisector

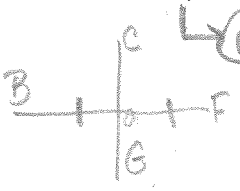
34. If $\angle 6$ and $\angle 7$ are complementary, then $m\angle 6 + m\angle 7 = 90$. Complementary ∠s

35. If O is the midpoint of $\overline{AD}$, then $\overline{AO} = \overline{OD}$. Midpoint

36. If $m\angle 1 = 90^\circ$, then $\angle 1$ is a right angle. Right Angles

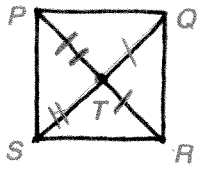
37. If $\angle 2 \cong \angle 6$, then $m\angle 2 = m\angle 6$. Definition of Congruence of ∠s

38. If $\overline{CG}$ bisects $\overline{BF}$, then $\overline{BO} = \overline{OF}$. Segment Bisector (at point O)



42. **Given:** $\overline{QT} \cong \overline{RT}$
$\overline{TS} \cong \overline{TP}$

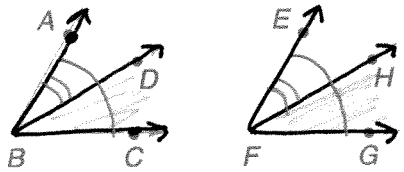
Prove: $\overline{QS} \cong \overline{RP}$



Statements	Reasons
1. $\overline{QT} \cong \overline{RT}$, $\overline{TS} \cong \overline{TP}$	1. Given
2. QT = RT TS = TP	2. Def of $\cong$ segments
3. QT + TS = RT + TP	3. Addition
4. QS = QT + TS RP = RT + TP	4. Segment Addition Post
5. QS = RP	5. Substitution
6. $\overline{QS} \cong \overline{RP}$	6. Def of $\cong$ segments

43. **Given:** $\angle ABC \cong \angle EFG$
$\angle ABD \cong \angle EFH$

Prove: $\angle DBC \cong \angle HFG$



Statements	Reasons
1. <ABC $\cong$ <EFG <ABD $\cong$ <EFH	1. Given
2. m<ABC = m<EFG m<ABD = m<EFH	2. Def of $\cong$ $\angle$s
3. m<ABC = m<ABD + m<DBC m<EFG = m<EFH + m<HFG	3. Angle Addition Postulate
4. m<ABD + m<DBC = m<EFH + m<HFG	4. Substitution
5. m<ABD + m<DBC = m<ABD + m<HFG	5. Substitution
6. m<DBC = m<HFG	6. Subtraction
7. <DBC $\cong$ <HFG	7. Def of $\cong$ $\angle$s